

## RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/591,482  
Source: IFWP  
Date Processed by STIC: 9/20/06

# *ENTERED*

## CRF Errors Edited by the STIC Systems Branch

Serial Number: 10/591,482

CRF Edit Date: 9/20/06  
Edited by: [Signature]

\_\_\_ Realigned nucleic acid/amino acid numbers/text in cases where the sequence text "wrapped" to the next line

\_\_\_ Corrected the SEQ ID NO. Sequence numbers edited were:

\_\_\_\_\_

\_\_\_ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

\_\_\_\_\_

\_\_\_ Deleted: ✓ invalid beginning/end-of-file text ; \_\_\_ page numbers

\_\_\_ Inserted mandatory headings/numeric identifiers, specifically:

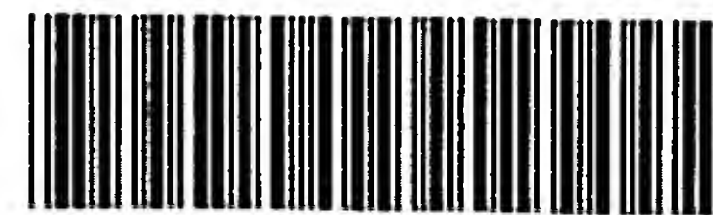
\_\_\_\_\_

\_\_\_ Moved responses to same line as heading/numeric identifier, specifically:

\_\_\_\_\_

\_\_\_ Other:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



IFWP

## RAW SEQUENCE LISTING

DATE: 09/20/2006

PATENT APPLICATION: US/10/591,482

TIME: 17:28:43

Input Set : A:\PTO.AMC.txt

Output Set: N:\CRF4\09202006\J591482.raw

3 <110> APPLICANT: Bayerische Julius-Maximilians-Universitat Wurzburg  
 5 <120> TITLE OF INVENTION: Mutein of a bone morphogenetic protein and use thereof  
 7 <130> FILE REFERENCE: S 10019 PCT  
 C--> 9 <140> CURRENT APPLICATION NUMBER: US/10/591,482  
 C--> 9 <141> CURRENT FILING DATE: 2006-09-01  
 9 <160> NUMBER OF SEQ ID NOS: 33  
 11 <170> SOFTWARE: PatentIn version 3.1  
 13 <210> SEQ ID NO: 1  
 14 <211> LENGTH: 114  
 15 <212> TYPE: PRT  
 16 <213> ORGANISM: Homo sapiens  
 18 <220> FEATURE:  
 19 <221> NAME/KEY: MISC\_FEATURE  
 20 <222> LOCATION: (1)..(114)  
 21 <223> OTHER INFORMATION: BMP-2  
 24 <400> SEQUENCE: 1  
 26 Gln Ala Lys His Lys Gln Arg Lys Arg Leu Lys Ser Ser Cys Lys Arg  
 27 1 5 10 15  
 30 His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp Trp Ile  
 31 20 25 30  
 34 Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly Glu Cys Pro  
 35 35 40 45  
 38 Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala Ile Val Gln  
 39 50 55 60  
 42 Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala Cys Cys Val  
 43 65 70 75 80  
 46 Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu Asn Glu  
 47 85 90 95  
 50 Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val Val Glu Gly Cys Gly  
 51 100 105 110  
 54 Cys Arg  
 58 <210> SEQ ID NO: 2  
 59 <211> LENGTH: 345  
 60 <212> TYPE: DNA  
 61 <213> ORGANISM: Homo sapiens  
 63 <220> FEATURE:  
 64 <221> NAME/KEY: misc\_feature  
 65 <222> LOCATION: (1)..(345)  
 66 <223> OTHER INFORMATION: BMP-2  
 69 <400> SEQUENCE: 2  
 70 caagccaaac acaaacagcg gaaacgcctt aagtccagct gtaagagaca ccctttgtac 60  
 72 gtggacttca gtgacgtggg gtggaatgac tggattgtgg ctcccccggg gtatcacgcc 120  
 74 ttttactgcc acggagaatg cccttttcct ctggctgatc atctgaactc cactaatcat 180

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76 gccattgttc agacgttggt caactctggt aactctaaga ttcctaaggc atgctgtgtc      240
78 ccgacagAAC tcagtgttat ctcatgtgtg taccttgacg agaataaaaa ggttgtatta      300
80 aagaactatc aggacatggt tgtggagggt tgtgggtgtc gctag                      345

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83 &lt;210&gt; SEQ ID NO: 3

84 &lt;211&gt; LENGTH: 116

85 &lt;212&gt; TYPE: PRT

86 &lt;213&gt; ORGANISM: Homo sapiens

88 &lt;220&gt; FEATURE:

89 &lt;221&gt; NAME/KEY: MISC\_FEATURE

90 &lt;222&gt; LOCATION: (1)..(116)

91 &lt;223&gt; OTHER INFORMATION: BMP-4

94 &lt;400&gt; SEQUENCE: 3

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96 Ser Pro Lys His His Ser Gln Arg Ala Arg Lys Lys Asn Lys Asn Cys
97 1          5          10          15
100 Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn Asp
101          20          25          30
104 Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly Asp
105          35          40          45
108 Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala Ile
109          50          55          60
112 Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala Cys
113 65          70          75          80
116 Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp Glu
117          85          90          95
120 Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu Gly
121          100          105          110
124 Cys Gly Cys Arg
125          115

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128 &lt;210&gt; SEQ ID NO: 4

129 &lt;211&gt; LENGTH: 351

130 &lt;212&gt; TYPE: DNA

131 &lt;213&gt; ORGANISM: Homo sapiens

133 &lt;220&gt; FEATURE:

134 &lt;221&gt; NAME/KEY: misc\_feature

135 &lt;222&gt; LOCATION: (1)..(351)

136 &lt;223&gt; OTHER INFORMATION: BMP-4

139 &lt;400&gt; SEQUENCE: 4

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140 agccctaagc atcactcaca gcgggccagg aagaagaata agaactgccg gcgccactcg      60
142 ctctatgtgg acttcagcga tgtgggctgg aatgactgga ttgtggcccc accaggctac      120
144 caggccttct actgccatgg ggactgcccc tttccactgg ctgaccacct caactcaacc      180
146 aaccatgcca ttgtgcagac cctgggtcaat tctgtcaatt ccagtatccc caaagcctgt      240
148 tgtgtgcccc ctgaactgag tgccatctcc atgctgtacc tggatgagta tgataagggtg      300
150 gtactgaaaa attatcagga gatggtagta gagggatgtg ggtgccgctg a              351

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153 &lt;210&gt; SEQ ID NO: 5

154 &lt;211&gt; LENGTH: 132

155 &lt;212&gt; TYPE: PRT

156 &lt;213&gt; ORGANISM: Homo sapiens

158 &lt;220&gt; FEATURE:

159 &lt;221&gt; NAME/KEY: MISC\_FEATURE

## RAW SEQUENCE LISTING

DATE: 09/20/2006

PATENT APPLICATION: US/10/591,482

TIME: 17:28:43

Input Set : A:\PTO.AMC.txt

Output Set: N:\CRF4\09202006\J591482.raw

160 &lt;222&gt; LOCATION: (1)..(132)

161 &lt;223&gt; OTHER INFORMATION: BMP-5

164 &lt;400&gt; SEQUENCE: 5

166 Asn Gln Asn Arg Asn Lys Ser Ser Ser His Gln Asp Ser Ser Arg Met

167 1 5 10 15

170 Ser Ser Val Gly Asp Tyr Asn Thr Ser Glu Gln Lys Gln Ala Cys Lys

171 20 25 30

174 Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln Asp Trp

175 35 40 45

178 Ile Ile Ala Pro Glu Gly Tyr Ala Ala Phe Tyr Cys Asp Gly Glu Cys

179 50 55 60

182 Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile Val

183 65 70 75 80

186 Gln Thr Leu Val His Leu Met Phe Pro Asp His Val Pro Lys Pro Cys

187 85 90 95

190 Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp

191 100 105 110

194 Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ser

195 115 120 125

198 Cys Gly Cys His

199 130

202 &lt;210&gt; SEQ ID NO: 6

203 &lt;211&gt; LENGTH: 399

204 &lt;212&gt; TYPE: DNA

205 &lt;213&gt; ORGANISM: Homo sapiens

207 &lt;220&gt; FEATURE:

208 &lt;221&gt; NAME/KEY: misc\_feature

209 &lt;222&gt; LOCATION: (1)..(399)

210 &lt;223&gt; OTHER INFORMATION: BMP-5

213 &lt;400&gt; SEQUENCE: 6

214 aatcaaaacc gcaataaatc cagctctcat caggactcct ccagaatgtc cagtgttgga 60

216 gattataaca caagtgagca aaaacaagcc tgtaagaagc acgaactcta tgtgagcttc 120

218 cgggatctgg gatggcagga ctggattata gcaccagaag gatacgctgc attttattgt 180

220 gatggagaat gttcttttcc acttaacgcc catatgaatg ccaccaacca cgctatagtt 240

222 cagactctgg ttcactctgat gtttcctgac cacgtaccaa agccttggtg tgctccaacc 300

224 aaattaaatg ccactctctgt tctgtacttt gatgacagct ccaatgtcat tttgaaaaaa 360

226 tatagaaata tggtagtacg ctcatgtggc tgccactaa 399

229 &lt;210&gt; SEQ ID NO: 7

230 &lt;211&gt; LENGTH: 132

231 &lt;212&gt; TYPE: PRT

232 &lt;213&gt; ORGANISM: Homo sapiens

234 &lt;220&gt; FEATURE:

235 &lt;221&gt; NAME/KEY: MISC\_FEATURE

236 &lt;222&gt; LOCATION: (1)..(132)

237 &lt;223&gt; OTHER INFORMATION: BMP-6

240 &lt;400&gt; SEQUENCE: 7

242 Gln Gln Ser Arg Asn Arg Ser Thr Gln Ser Gln Asp Val Ala Arg Val

243 1 5 10 15

246 Ser Ser Ala Ser Asp Tyr Asn Ser Ser Glu Leu Lys Thr Ala Cys Arg

## RAW SEQUENCE LISTING

DATE: 09/20/2006

PATENT APPLICATION: US/10/591,482

TIME: 17:28:43

Input Set : A:\PTO.AMC.txt

Output Set: N:\CRF4\09202006\J591482.raw

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247          20          25          30
250 Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln Asp Trp
251          35          40          45
254 Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly Glu Cys
255          50          55          60
258 Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala Ile Val
259 65          70          75          80
262 Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys Pro Cys
263          85          90          95
266 Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe Asp Asp
267          100         105         110
270 Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val Arg Ala
271          115         120         125
274 Cys Gly Cys His
275          130

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278 &lt;210&gt; SEQ ID NO: 8

279 &lt;211&gt; LENGTH: 399

280 &lt;212&gt; TYPE: DNA

281 &lt;213&gt; ORGANISM: Homo sapiens

283 &lt;220&gt; FEATURE:

284 &lt;221&gt; NAME/KEY: misc\_feature

285 &lt;222&gt; LOCATION: (1)..(399)

286 &lt;223&gt; OTHER INFORMATION: BMP-6

289 &lt;400&gt; SEQUENCE: 8

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290 caacagagtc gtaatcgctc taccaggtcc caggacgtgg cgcgggtctc cagtgtttca      60
292 gattacaaca gcagtgaatt gaaaacagcc tgcaggaagc atgagctgta tgtgagtttc      120
294 caagacctgg gatggcagga ctggatcatt gcacccaagg gctatgctgc caattactgt      180
296 gatggagaat gctccttccc actcaacgca cacatgaatg caaccaacca cgcgattgtg      240
298 cagaccttgg ttcaccttat gaaccccgag tatgtcccca aaccgtgctg tgcgccaact      300
300 aagctaaatg ccatctcggg tctttacttt gatgacaact ccaatgtcat tctgaaaaaa      360
302 tacaggaata tgggtgtaag agcttgtgga tgccactaa      399

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305 &lt;210&gt; SEQ ID NO: 9

306 &lt;211&gt; LENGTH: 139

307 &lt;212&gt; TYPE: PRT

308 &lt;213&gt; ORGANISM: Homo sapiens

310 &lt;220&gt; FEATURE:

311 &lt;221&gt; NAME/KEY: MISC\_FEATURE

312 &lt;222&gt; LOCATION: (1)..(139)

313 &lt;223&gt; OTHER INFORMATION: BMP-7

316 &lt;400&gt; SEQUENCE: 9

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318 Ser Thr Gly Ser Lys Gln Arg Ser Gln Asn Arg Ser Lys Thr Pro Lys
319 1          5          10          15
322 Asn Gln Glu Ala Leu Arg Met Ala Asn Val Ala Glu Asn Ser Ser Ser
323          20          25          30
326 Asp Gln Arg Gln Ala Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg
327          35          40          45
330 Asp Leu Gly Trp Gln Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala
331          50          55          60
334 Tyr Tyr Cys Glu Gly Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn

```

## RAW SEQUENCE LISTING

DATE: 09/20/2006

PATENT APPLICATION: US/10/591,482

TIME: 17:28:43

Input Set : A:\PTO.AMC.txt

Output Set: N:\CRF4\09202006\J591482.raw

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335 65          70          75          80
338 Ala Thr Asn His Ala Ile Val Gln Thr Leu Val His Phe Ile Asn Pro
339          85          90          95
342 Glu Thr Val Pro Lys Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile
343          100          105          110
346 Ser Val Leu Tyr Phe Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr
347          115          120          125
350 Arg Asn Met Val Val Arg Ala Cys Gly Cys His
351          130          135
354 <210> SEQ ID.NO: 10
355 <211> LENGTH: 420
356 <212> TYPE: DNA
357 <213> ORGANISM: Homo sapiens
359 <220> FEATURE:
360 <221> NAME/KEY: misc_feature
361 <222> LOCATION: (1)..(420)
362 <223> OTHER INFORMATION: BMP-7
365 <400> SEQUENCE: 10
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368 ctgcggatgg ccaacgtggc agagaacagc agcagcgacc agaggcaggc ctgtaagaag      120
370 cacgagctgt atgtcagctt ccgagacctg ggctggcagg actggatcat cgcgcctgaa      180
372 ggctacgccg cctactactg tgagggggag tgtgccttcc ctctgaactc ctacatgaac      240
374 gccaccaacc acgccatcgt gcagacgctg gtccacttca tcaacccgga aacggtgccc      300
376 aagccctgct gtgcgcccac gcagctcaat gccatctccg tcctctactt cgatgacagc      360
378 tccaacgtca tcctgaagaa atacagaaac atggtggtcc gggcctgtgg ctgccactag      420
381 <210> SEQ ID NO: 11
382 <211> LENGTH: 139
383 <212> TYPE: PRT
384 <213> ORGANISM: Homo sapiens
386 <220> FEATURE:
387 <221> NAME/KEY: MISC_FEATURE
388 <222> LOCATION: (1)..(139)
389 <223> OTHER INFORMATION: BMP-8
392 <400> SEQUENCE: 11
394 Ala Val Arg Pro Leu Arg Arg Arg Gln Pro Lys Lys Ser Asn Glu Leu
395 1          5          10          15
398 Pro Gln Ala Asn Arg Leu Pro Gly Ile Phe Asp Asp Val His Gly Ser
399          20          25          30
402 His Gly Arg Gln Val Cys Arg Arg His Glu Leu Tyr Val Ser Phe Gln
403          35          40          45
406 Asp Leu Gly Trp Leu Asp Trp Val Ile Ala Pro Gln Gly Tyr Ser Ala
407          50          55          60
410 Tyr Tyr Cys Glu Gly Glu Cys Ser Phe Pro Leu Asp Ser Cys Met Asn
411 65          70          75          80
414 Ala Thr Asn His Ala Ile Leu Gln Ser Leu Val His Leu Met Lys Pro
415          85          90          95
418 Asn Ala Val Pro Lys Ala Cys Cys Ala Pro Thr Lys Leu Ser Ala Thr
419          100          105          110
422 Ser Val Leu Tyr Tyr Asp Ser Ser Asn Asn Val Ile Leu Arg Lys His

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VERIFICATION SUMMARY

PATENT APPLICATION: US/10/591,482

DATE: 09/20/2006

TIME: 17:28:44

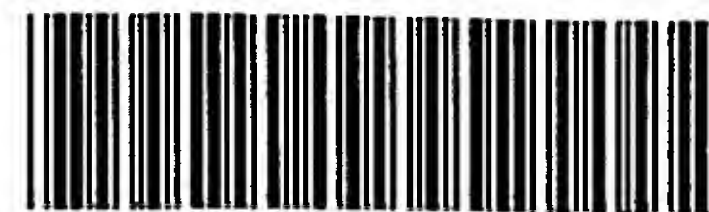
Input Set : A:\PTO.AMC.txt

Output Set: N:\CRF4\09202006\J591482.raw

L:9 M:270 C: Current Application Number differs, Replaced Current Application No

L:9 M:271 C: Current Filing Date differs, Replaced Current Filing Date

# **Raw Sequence Listing before editing (for reference only)**



IFWP

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/591,482

DATE: 09/18/2006

TIME: 15:18:00

Input Set : A:\pto.da.txt

Output Set: N:\CRF4\09182006\J591482.raw

3 &lt;110&gt; APPLICANT: Bayerische Julius-Maximilians-Universitat Wurzburg

5 &lt;120&gt; TITLE OF INVENTION: Mutein of a bone morphogenetic protein and use thereof

7 &lt;130&gt; FILE REFERENCE: S 10019 PCT

C--&gt; 9 &lt;140&gt; CURRENT APPLICATION NUMBER: US/10/591,482

C--&gt; 9 &lt;141&gt; CURRENT FILING DATE: 2006-09-01

9 &lt;160&gt; NUMBER OF SEQ ID NOS: 33

11 &lt;170&gt; SOFTWARE: PatentIn version 3.1

## ERRORED SEQUENCES

1283 &lt;210&gt; SEQ ID NO: 33

1284 &lt;211&gt; LENGTH: 110

1285 &lt;212&gt; TYPE: PRT

1286 &lt;213&gt; ORGANISM: Homo sapiens

1288 &lt;220&gt; FEATURE:

1289 &lt;221&gt; NAME/KEY: MISC\_FEATURE

1290 &lt;222&gt; LOCATION: (1)..(110)

1291 &lt;223&gt; OTHER INFORMATION: GDF-2 mutein

1294 &lt;400&gt; SEQUENCE: 33

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1297 1 5 10 15

1300 Phe Glu Asp Ile Gly Trp Asp Ser Trp Ile Ile Ala Pro Lys Glu Tyr

1301 20 25 30

1304 Glu Ala Tyr Glu Cys Lys Gly Gly Cys Phe Phe Pro Pro Ala Asp Asp

1305 35 40 45

1308 Val Thr Pro Thr Lys His Ala Ile Val Gln Thr Leu Val His Leu Lys

1309 50 55 60

1312 Phe Pro Thr Lys Val Gly Lys Ala Cys Cys Val Pro Thr Lys Leu Ser

1313 65 70 75 80

1316 Pro Ile Ser Val Leu Tyr Lys Asp Asp Met Gly Val Pro Thr Leu Lys

1317 85 90 95

1320 Tyr His Tyr Glu Gly Met Ser Val Ala Glu Cys Gly Cys Arg

1321 100 105 110

E--&gt; 1327 21

E--&gt; 1338 22

Does Not Comply  
Corrected Diskette Needed

## VERIFICATION SUMMARY

DATE: 09/18/2006

PATENT APPLICATION: US/10/591,482

TIME: 15:18:01

Input Set : A:\pto.da.txt

Output Set: N:\CRF4\09182006\J591482.raw

L:9 M:270 C: Current Application Number differs, Replaced Current Application No

L:9 M:271 C: Current Filing Date differs, Replaced Current Filing Date

L:1327 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:33

L:1333 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:33